UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION I
ONE CONGRESS STREET SUITE 1100
BOSTON, MASSACHUSETTS 02114-2023

Memorandum

Date: August 25, 2004

Subj: Region 1 Responses to Remedy Review Board comments on Iron Horse Park OU3

From: Don McElroy, Region 1 RPM DMc

To: Michael Hurd, HQ OSRT

Attached are the Region 1 responses to the Remedy Review Board comments for Iron Horse Park OU3. These are the responses which were previously sent via email on May 5, 2004

Iron Horse Park - OU3
Responses to Remedy Review Board Comments
May 2004

Comment #1

The region's proposed remedy includes source area capping designed to address health risks from direct soil contact and groundwater ingestion. However, the information presented to the board did not adequately document lateral and vertical contaminant transport to wetlands and groundwater. Therefore, it was not clear how much the proposed capping would reduce risks to groundwater and wetlands sediments. The board recommends that the region evaluate the relative importance of infiltration and sub-surface vertical and lateral flow for contaminant transport to groundwater and wetlands. If the analysis indicates that the proposed caps do not provide cost-effective risk reduction, the region may need to consider other options, such as hydraulic controls, alternative cap designs, and/or constructing a consolidated landfill. A conceptual site model could provide a framework to examine infiltration, seasonal groundwater-surface water interaction, and lateral flow.

Response # 1

The existing RI/FS Report contains much of the information to address the concerns raised by the board in Comment #1. As shown and discussed during the presentation to the board in August 2003, much of Iron Horse Park OU3 can be viewed as numerous individual sites. For each area of concern, contaminant fate and transport are discussed in Section 5 of the September 1997 RI Report. In addition, the hydrogeology of each source area and the groundwater/surface water interaction are summarized in Appendix C of the FS Report. These sections of the report contain the information which would be utilized in the development of a conceptual site model. Transport mechanisms such as infiltration and overland flow currently will facilitate contaminant transport to groundwater and sediments. The FS Report Sections 5 and 7 text and tables provide evaluation of the reduction in contaminant mobility and impacts to risk due to use of caps. The caps currently proposed in the FS Report for each area of concern will reduce transport of contaminants via the mechanisms noted above.

For each AOC at Iron Horse Park OU3 for which a cap is proposed, "Prevent ingestion of contaminated groundwater in excess of ARARs" is a remedial action objective (RAO). However, the groundwater contamination found in OU3 is at comparatively low levels, and is sporadic in nature in the sense that there is no defined plume. For a number of the AOCs (B&M Landfill, B&M Locomotive Shop Disposal Area, Old B&M Oil/Sludge Recycling Area and Contaminated Soils Area) there is a second RAO for preventing direct contact with contaminated soils. The Old B&M Oil/Sludge Recycling Area and Contaminated Soils Area are both

contaminated soils areas, not landfills. The caps proposed for those areas (asphalt), are intended to prevent direct contact with contaminated soils. The caps proposed for the B&M Landfill, RSI Landfill and the B&M Locomotive Shop Disposal Area (which are landfills) are the more traditional solid waste caps (RSI Landfill and the B&M Locomotive Shop Disposal Area) and hazardous waste caps (B&M Landfill), intended to prevent infiltration, while also preventing direct contact.
The use of a containment remedy for these areas of concern also meets the intent of the EPA guidance document entitled Presumptive Remedy of CERCLA Municipal Landfill Sites (EPA/540/F-93/035, OSWER Directive 9355.0-49FS, September 1993).

The ARARs Tables provided to the board, also list Massachusetts Solid Waste Regulations. Under these regulations, waste or landfill material, such as is found in numerous OU3 AOCs must either be excavated or capped in place. It should be noted that Shaffer Landfill, which is OU2 of Iron Horse Park which completed construction in 2003 was closed under Massachusetts Solid Waste Regulations utilizing a single barrier cap. The Shaffer Landfill was a mixed waste landfill which accepted wasted from the 1960's to the 1980's and was the subject of a 1993 ROD. Risk from the ingestion of groundwater was the primary driver of the Shaffer remedy.

The groundwater contaminants which have driven the risk at OU3 (manganese and arsenic) and the levels at which they have been detected, are such that a more exhaustive infiltration/transport study would not be cost effective or beneficial. Capping the landfill areas (utilizing solid waste or hazardous waste caps) to prevent/limit infiltration as well as to prevent direct contact, and preventing direct contact with contaminated soils at the contaminated soils AOCs (using asphalt barriers), are reasonable and appropriate source control response actions.

Comment #2

As presented to the board, the wetland, pond, and canal sediment portion of the proposed remedy relied not on a site-specific risk assessment, but on literature benchmark screening criteria to determine the proposed cleanup levels for sediment contamination. The board also notes that the pathways for contaminant transport into sediments and surface water have not been adequately characterized (e.g., groundwater transport, overland flow, direct discharge). Therefore, the region's proposal to excavate sediments at a significant cost appears to be premature. Prior to such an action, the board recommends that the region evaluate site-specific risk and, where risk is established, develop site-specific cleanup levels, e.g., using a weight-of-evidence approach that includes sediment toxicity studies in each wetland area. The board is also concerned that without proper characterization of contaminant pathways, the potential for recontamination exists. For example, if groundwater presents a significant contaminant pathway to sediment or surface water, it may be necessary to address sediments and groundwater at the same time to avoid recontamination.

Response #2

In accordance with the recommendation of the Board, Region 1 has deferred a sediment remedy at Iron Horse Park. The Region will obtain and evaluate site specific toxicity data during 2004 and will utilize this data to develop site specific sediment PRGs if necessary.

While the Region has determined that there are groundwater-to-surface water recharge locations, given the relatively low levels of groundwater contamination it is unlikely that there is a significant risk of sediment re-contamination

Comment #3

The information presented to the board did not make clear whether contamination in groundwater is migrating offsite and might affect drinking water supplies. The board recommends that the region evaluate whether private wells may be contaminated and whether additional monitoring or other actions are appropriate.

Response #3

The direction of groundwater flow, established with monitoring wells and piezometers, indicates a very low probability of groundwater contamination impacting any private off-site wells which may exist to the north of the railroad tracks and to the west of Pond Street. Groundwater flow direction, relatively low contaminant levels, and the Middlesex Canal (as a natural barrier), make it very unlikely that groundwater contamination is affecting properties where private wells could be located. However, the Region will conduct a survey (via leafleting) to identify the existence of private wells in the area which could potentially be affected. If private wells are identified in this area, the Region will attempt to gain permission to sample them.

Comment #4

The information presented to the board did not provide any details on the type of institutional controls and associated costs proposed with the various alternatives. The board recommends that the Region include this information, in detail, in the decision documents.

Response #4

As recommended by the board, additional information and discussion regarding institutional controls and efforts required to implement them with the various alternatives, will be included in the Proposed Plan and the Record of Decision.

Comment #5

The board notes that the operation and maintenance (O&M) costs appear to be high compared to capital costs. In addition, the O&M costs are the same for a number of different alternatives for the same area of concern (the board would expect them to be different). For example, the contaminated soils area (AOC 5) has O&M costs of about $3.5 million for three alternatives -- institutional controls, monitored natural attenuation, and excavation with onsite stabilization. Further, for the same area, estimated O&M for excavation and onsite treatment using soil washing/chemical extraction is $10 million. The board recommends that the region reevaluate the O&M costs overall and include more detailed information in the decision documents.

Response #5

The O&M and capital costs for each alternative within each AOC have been reevaluated. A significant change which affects O&M costs in a number of areas, is that confirmatory sampling during implementation of the remedy, was initially carried as an O&M cost rather than as an RA cost. In a number of alternatives this significantly affects the O&M cost (however, as the sampling, for example, is still occurring, the overall remedy cost has not significantly changed for each alternative. While reevaluating O&M versus RA costs, the Region also reassessed assumptions on which O&M costs were based (primarily, number of samples and frequency of monitoring). This reassessment resulted in some additional cost changes, most of which, while not large, do affect the alternative cost. Enclosed is a Table entitled "*Abbreviated Comparative Analysis of Remedial Options at Each Area of Concern*", which provides a comparison of capital and O&M costs from 2003 (prior to Remedy Review Board comments) with those same costs developed in 2004 (following Remedy Review Board comments). Table ES-2 which contains the new costs has been added to the FS.

With regard to the example at AOC 5 (the 3rd alternative is actually ***in-situ*** stabilization rather than excavation and stabilization) cited by the Board, the primary driver for O&M costs, is long-term monitoring; with comparatively small costs associated with inspections or cap and fence maintenance. Monitoring will be included as part of each alternative at OU3. In general, the monitoring assumptions (number of sample locations, types of samples, frequency of collection) at this conceptual stage, do not differ greatly enough for different alternatives within each AOC to account for significant variation in O&M costs. The reductions seen between the 2003 and 2004 costs for this AOC are a result of re-evaluating the assumptions (number of samples and frequency) upon which the O&M costs are based.

Comment #6

The board found that the information package prepared for the review of this cleanup proposal

lacked some of the information necessary to evaluate goals and benefits of the various alternatives. In addition, the overall site cleanup strategy, including future use assumptions, is not clear in the draft proposed plan included in the board package. The board recommends that the decision documents more clearly explain the alternatives and how this operable unit fits into the overall cleanup strategy for the site.

Response #6

The initial draft Proposed Plan (included in the package submitted to the Remedy Review Board), was prepared in accordance with current proposed plan guidelines, i.e. in a more "Fact Sheet"-like format. On further consideration and in accordance with the comments and recommendations of the Remedy Review Board, the Region feels that this approach does not seem to fit Iron Horse Park Operable Unit 3, very well. The Fact Sheet and comparative tables format may not provide enough flexibility and detail to effectively evaluate the relative merits of various alternatives within each AOC. Therefore, the Proposed Plan scheduled for June 2004, will contain a comparative analysis discussion evaluating the goals and relative benefits of the various alternatives within each AOC. In addition, as recommended by the board, discussion will be provided regarding overall cleanup strategies and future use assumptions.

Comment #7

The board did not find information to indicate whether adequate evaluation of indoor exposure pathways was conducted. The board recommends that the Region evaluate and/or document the characterization performed for indoor exposure pathways, which may include vapor intrusion and contaminated dust.

Response #7

Iron Horse Park OU3, is defined by a number of discrete source areas or Areas of Concern (AOCs), within a property of greater than 500 acres. As has been described elsewhere, this property is primarily an older railyard and industrial park. In general, groundwater contamination at the site, while in some instances exceeding the risk range, is relatively low, sporadic, and there is no defined plume.

None of the buildings on the property are within any of the identified AOCs and do not have a reasonable expectation for being affected.

However, during the development of the RI, groundwater contamination data for Iron Horse Park were compared with Massachusetts GW-2 standards. The MCP GW-2 groundwater standards apply to groundwater that is considered both shallow and where there is currently a structure built on the land above the groundwater. These standards are intended to address the potential migration of volatile material from groundwater into the indoor air. All groundwater contamination was below Massachusetts GW-2 levels.

TABLE ES-2. ABBREVIATED COMPARATIVE ANALYSIS OF REMEDIAL OPTIONS AT EACH AREA OF CONCERN

AOC:	B&M Railroad Landfill					
Soil Options / Threshold Criteria / Cost	Protection of Human Health	Protection of Environment	ARARs	Capital Cost ($million)	O&M Cost ($million)	Total Cost ($million)
No Action	N/A	□	□	$0.00	$0.00	$0.00
Inst. Actions	N/A	□	□	$0.22	$1.49	$1.71
InSitu-1	N/A	□	□	$0.22	$1.61	$1.83
InSitu-2						
InSitu-3						
SC-1	N/A	■	■	$8.93	$0.71	$9.64
SC-2						
Off Site						
OnSite-1						
OnSite-2						

AOC:	RSI Landfill					
Soil Options / Threshold Criteria / Cost	Protection of Human Health	Protection of Environment	ARARs	Capital Cost ($million)	O&M Cost ($million)	Total Cost ($million)
No Action	N/A	N/A	□	$0.00	$0.00	$0.00
Inst. Actions						
InSitu-1						
InSitu-2						
InSitu-3						
SC-1	N/A	N/A	■	$1.87	$0.69	$2.56
SC-2						
Off Site						
OnSite-1						
OnSite-2						

AOC:	B&M Locomotive Shop Disposal Areas					
Soil Options / Threshold Criteria / Cost	Protection of Human Health	Protection of Environment	ARARs	Capital Cost ($million)	O&M Cost ($million)	Total Cost ($million)
No Action	□	□	□	$0.00	$0.00	$0.00
Inst. Actions	□	□	□	$0.18	$0.98	$1.16
InSitu-1	□	□	□	$0.18	$1.04	$1.22
InSitu-2						
InSitu-3						
SC-1	■	■	■	$2.01	$0.51	$2.52
SC-2	■	■	■	$8.02	$0.60	$8.62
Off Site						
OnSite-1	■	■	■	$15.82	$19.23	$35.05
OnSite-2	■	■	■	$14.30	$29.72	$44.02

AOC:	Old B&M Oil/Sludge Recycling Area					
Soil Options / Threshold Criteria / Cost	Protection of Human Health	Protection of Environment	ARARs	Capital Cost ($million)	O&M Cost ($million)	Total Cost ($million)
No Action	□	N/A	■	$0.00	$0.00	$0.00
Inst. Actions	□	N/A	■	$0.18	$1.28	$1.46
InSitu-1	□	N/A	■	$0.18	$1.37	$1.55
InSitu-2						
InSitu-3						
SC-1	■	N/A	■	$1.22	$0.89	$2.11
SC-2	■	N/A	■	$4.88	$0.74	$5.62
Off Site						
OnSite-1	■	N/A	■	$7.16	$8.96	$16.12
OnSite-2	■	N/A	■	$7.79	$13.59	$21.38

AOC:	Contaminated Soils Area					
Soil Options / Threshold Criteria / Cost	Protection of Human Health	Protection of Environment	ARARs	Capital Cost ($million)	O&M Cost ($million)	Total Cost ($million)
No Action	□	N/A	■	$0.00	$0.00	$0.00
Inst. Actions	□	N/A	■	$0.21	$3.43	$3.64
InSitu-1	□	N/A	■	$0.21	$3.72	$3.93
InSitu-2	■	N/A	■	$0.74	$3.62	$4.36
InSitu-3	■	N/A	■	$1.20	$10.00	$11.20
SC-1	■	N/A	■	$0.95	$1.45	$2.40
SC-2						
Off Site	■	N/A	■	$6.52	$1.71	$8.23
OnSite-1	■	N/A	■	$3.96	$4.53	$8.49
OnSite-2	■	N/A	■	$5.68	$6.03	$11.71

AOC:	Asbestos Landfill					
Soil Options / Threshold Criteria / Cost	Protection of Human Health	Protection of Environment	ARARs	Capital Cost ($million)	O&M Cost ($million)	Total Cost ($million)
No Action	■	N/A	◪	$0.00	$0.00	$0.00
Inst. Actions	■	N/A	■	$0.28	$1.85	$2.13
InSitu-1						
InSitu-2						
InSitu-3						
SC-1						
SC-2						
Off Site						
OnSite-1						
OnSite-2						

AOC:	Asbestos Lagoons					
Soil Options / Threshold Criteria / Cost	Protection of Human Health	Protection of Environment	ARARs	Capital Cost ($million)	O&M Cost ($million)	Total Cost ($million)
No Action	□	N/A	□	$0.00	$0.00	$0.00
Inst. Actions	□	N/A	□	$0.14	$1.07	$1.21
InSitu-1						
InSitu-2						
InSitu-3						
SC-1	■	N/A	■	$2.21	$0.69	$2.90
SC-2	■	N/A	■	$1.24	$0.70	$1.94
Off Site						
OnSite-1						
OnSite-2						

AOC:	West Middlesex Canal Group					
Sediment Options / Threshold Criteria / Cost	Protection of Human Health	Protection of Environment	ARARs	Capital Cost ($million)	O&M Cost ($million)	Total Cost ($million)
No Action	N/A	□	□	$0.00	$0.00	$0.00
Inst. Actions	N/A	□	◪	$0.07	$1.41	$1.48
InSitu	N/A	□	◪	$0.07	$1.57	$1.64
SC-1						
SC-2	N/A	■	■	$0.29	$1.57	$1.86
SC/Off Site						
SC/OnSite-1						
SC/OnSite-2						

AOC:	Wetland 2 Group					
Sediment Options / Threshold Criteria / Cost	Protection of Human Health	Protection of Environment	ARARs	Capital Cost ($million)	O&M Cost ($million)	Total Cost ($million)
No Action	N/A	□	□	$0.00	$0.00	$0.00
Inst. Actions	N/A	□	◪	$0.01	$2.08	$2.09
InSitu	N/A	□	◪	$0.01	$2.34	$2.35
SC-1	N/A	■	■	$4.48	$2.49	$6.97
SC-2	N/A	■	■	$4.06	$2.34	$6.40
SC/Off Site	N/A	■	■	$6.80	$2.34	$9.14
SC/OnSite-1	N/A	■	■	$5.20	$3.94	$9.14
SC/OnSite-2	N/A	■	■	$6.88	$4.83	$11.71

AOC:	East Middlesex Canal Group					
Sediment Options / Threshold Criteria / Cost	Protection of Human Health	Protection of Environment	ARARs	Capital Cost ($million)	O&M Cost ($million)	Total Cost ($million)
No Action	N/A	□	□	$0.00	$0.00	$0.00
Inst. Actions	N/A	□	◪	$0.06	$1.47	$1.53
InSitu	N/A	□	◪	$0.06	$1.64	$1.70
SC-1						
SC-2	N/A	■	■	$0.27	$1.64	$1.91
SC/Off Site						
SC/OnSite-1						
SC/OnSite-2						

AOC:	Richardson Pond Group					
Sediment Options / Threshold Criteria / Cost	Protection of Human Health	Protection of Environment	ARARs	Capital Cost ($million)	O&M Cost ($million)	Total Cost ($million)
No Action	N/A	□	□	$0.00	$0.00	$0.00
Inst. Actions	N/A	□	◪	$0.01	$1.49	$1.50
InSitu	N/A	□	◪	$0.01	$1.67	$1.68
SC-1						
SC-2	N/A	■	■	$0.22	$1.67	$1.89
SC/Off Site						
SC/OnSite-1						
SC/OnSite-2						

AOC:	Content Brook Wetland Group					
Sediment Options / Threshold Criteria / Cost	Protection of Human Health	Protection of Environment	ARARs	Capital Cost ($million)	O&M Cost ($million)	Total Cost ($million)
No Action	N/A	□	□	$0.00	$0.00	$0.00
Inst. Actions	N/A	□	◪	$0.01	$1.42	$1.43
InSitu	N/A	□	◪	$0.01	$1.58	$1.59
SC-1						
SC-2	N/A	■	■	$1.45	$1.58	$3.03
SC/Off Site	N/A	■	■	$1.89	$1.58	$3.47
SC/OnSite-1	N/A	■	■	$2.23	$1.89	$4.12
SC/OnSite-2	N/A	■	■	$4.79	$2.06	$6.85

AOC:	West Middlesex Canal Group					
Surface Water Options / Threshold Criteria / Cost	Protection of Human Health	Protection of Environment	ARARs	Capital Cost ($million)	O&M Cost ($million)	Total Cost ($million)
No Action						
Inst. Actions						
InSitu						
OnSite-1						
OnSite-2						

AOC:	Wetland 2 Group					
Surface Water Options / Threshold Criteria / Cost	Protection of Human Health	Protection of Environment	ARARs	Capital Cost ($million)	O&M Cost ($million)	Total Cost ($million)
No Action	N/A	□	◪	$0.00	$0.00	$0.00
Inst. Actions	N/A	□	◪	$0.01	$1.92	$1.93
InSitu	N/A	◪	◪	$0.01	$3.25	$3.26
OnSite-1	N/A	■	◪	$2.00	$9.07	$11.07
OnSite-2	N/A	■	◪	$4.26	$12.40	$16.66

AOC:	East Middlesex Canal Group					
Surface Water Options / Threshold Criteria / Cost	Protection of Human Health	Protection of Environment	ARARs	Capital Cost ($million)	O&M Cost ($million)	Total Cost ($million)
No Action						
Inst. Actions						
InSitu						
OnSite-1						
OnSite-2						

AOC:	Richardson Pond Group					
Surface Water Options / Threshold Criteria / Cost	Protection of Human Health	Protection of Environment	ARARs	Capital Cost ($million)	O&M Cost ($million)	Total Cost ($million)
No Action	N/A	□	◪	$0.00	$0.00	$0.00
Inst. Actions	N/A	□	◪	$0.01	$1.32	$1.33
InSitu	N/A	◪	◪	$0.01	$2.22	$2.23
OnSite-1						
OnSite-2						

AOC:	Content Brook Wetland Group					
Surface Water Options / Threshold Criteria / Cost	Protection of Human Health	Protection of Environment	ARARs	Capital Cost ($million)	O&M Cost ($million)	Total Cost ($million)
No Action	N/A	□	◪	$0.00	$0.00	$0.00
Inst. Actions	N/A	□	◪	$0.01	$1.25	$1.26
InSitu	N/A	◪	◪	$0.01	$2.09	$2.10
OnSite-1	N/A	■	◪	$2.36	$9.23	$11.59
OnSite-2	N/A	■	◪	$4.73	$11.45	$16.18

Notes AOC-Area of Concern Options not evaluated for an AOC have been left blank.

Protection of Human Health/Environment: □-No Protection, ◪-Partially Protective, ■-Protective N/A -Not applicable: Risk limits not exceeded for this media and AOC

ARARs: □-Does Not Meet, ◪-May Not Meet/Partially Meets, ■-Meets